

2SK2084(L), 2SK2084(S)

Silicon N Channel MOS FET

Application

High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- 4 V gate drive device can be driven from 5 V source
- Suitable for Switching regulator, DC – DC converter

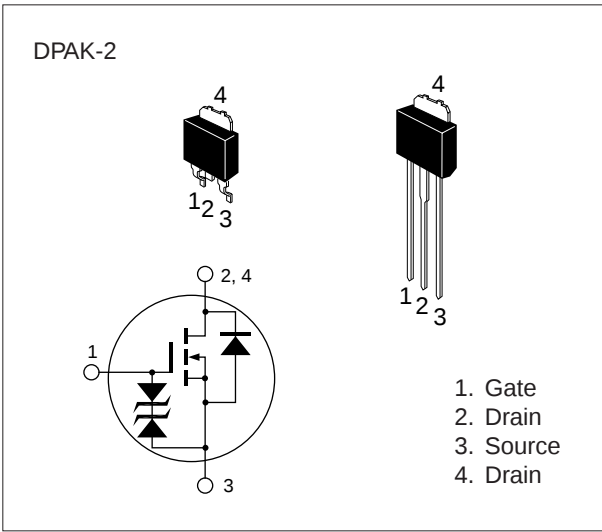


Table 1 Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	20	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	7	A
Drain peak current	$I_{D(pulse)}^*$	28	A
Body-drain diode reverse drain current	I_{DR}	7	A
Channel dissipation	P_{ch}^{**}	20	W
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	–55 to +150	°C

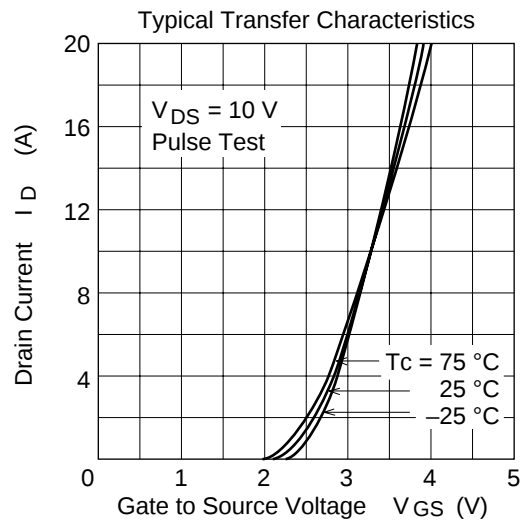
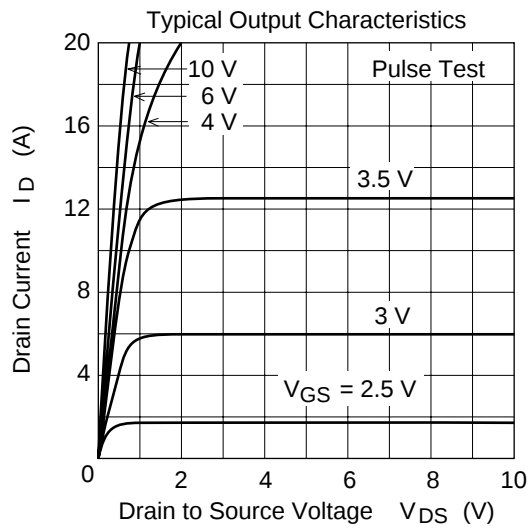
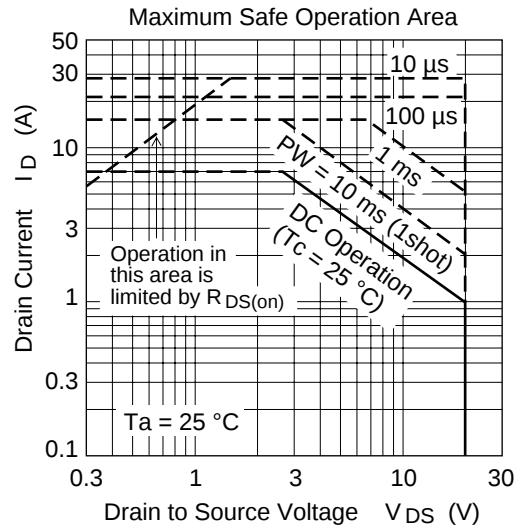
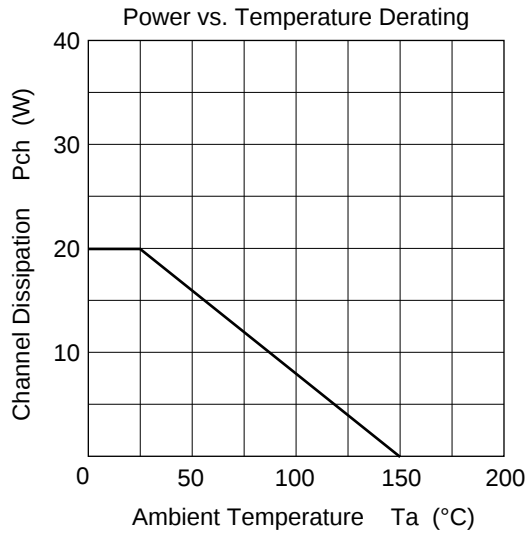
* $PW \leq 10 \mu s$, duty cycle $\leq 1 \%$

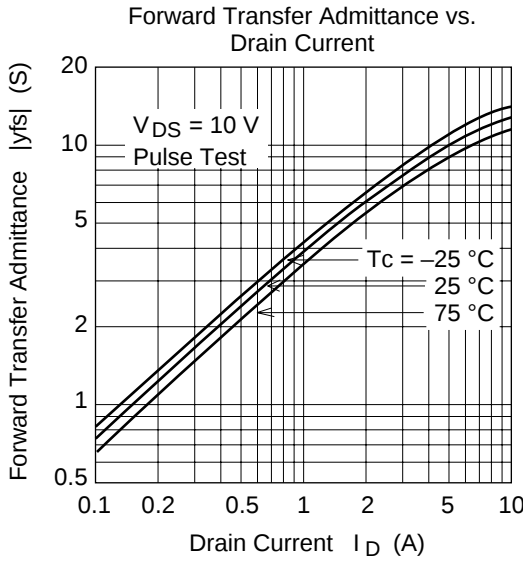
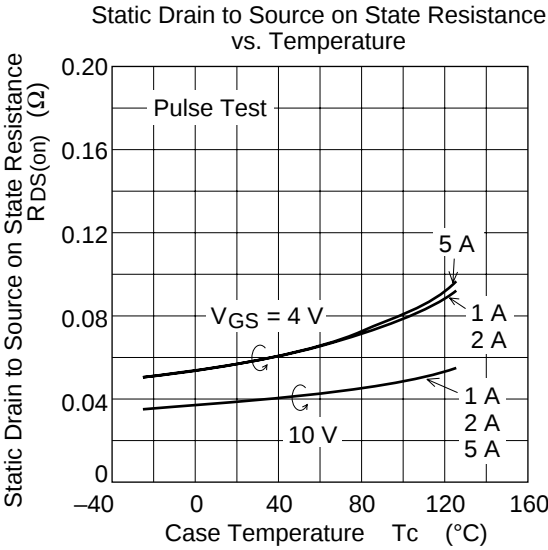
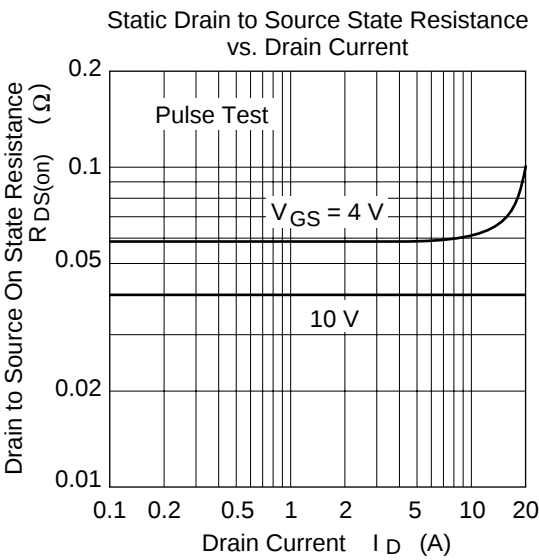
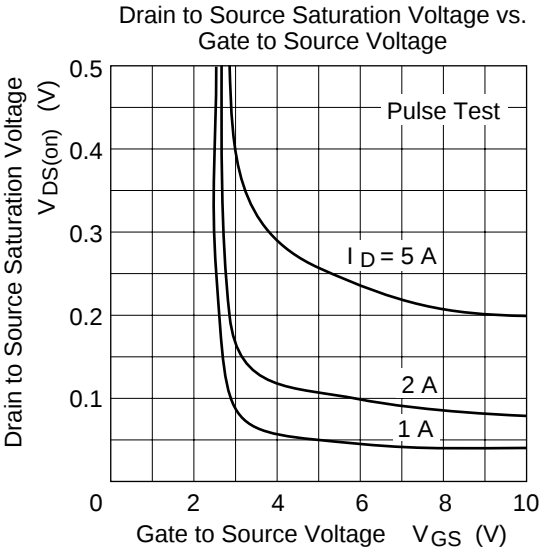
** Value at $T_c = 25 \text{ }^\circ\text{C}$

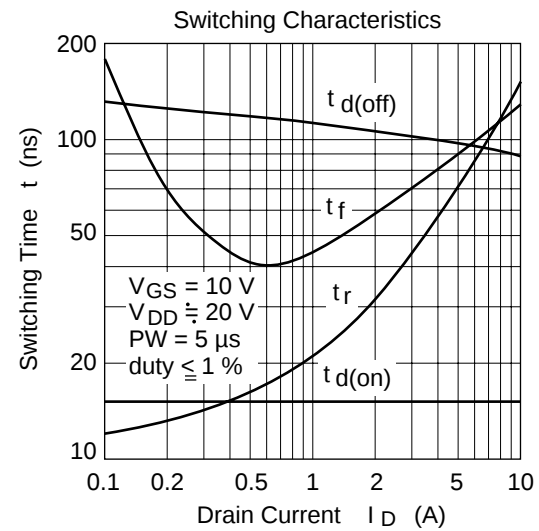
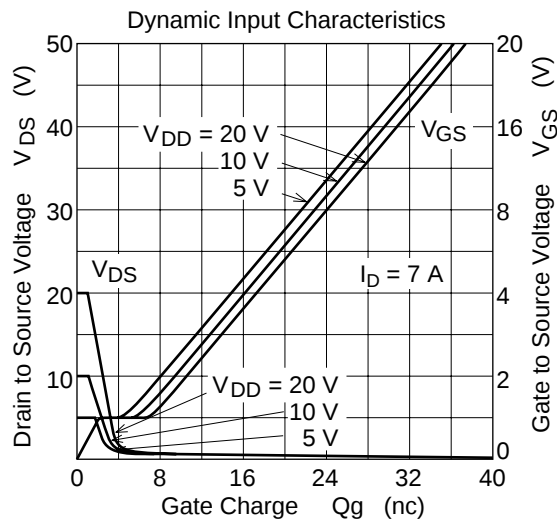
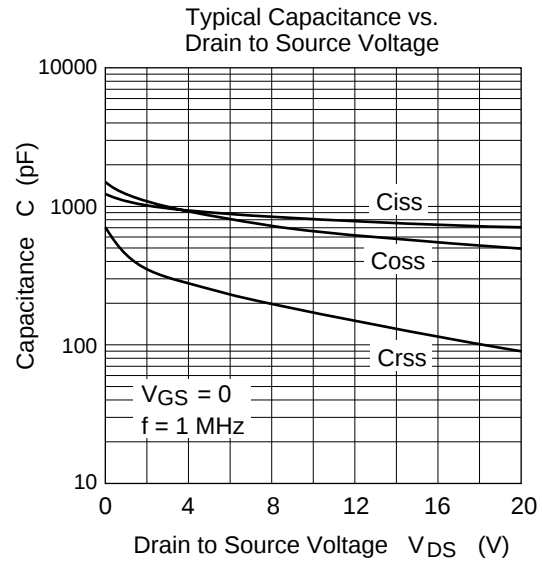
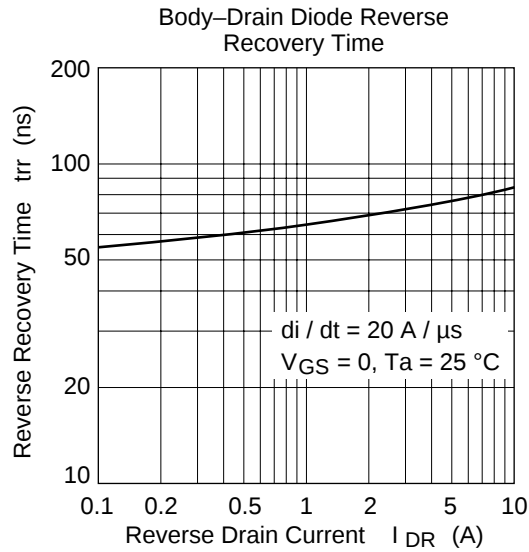
Table 2 Electrical Characteristics (Ta = 25°C)

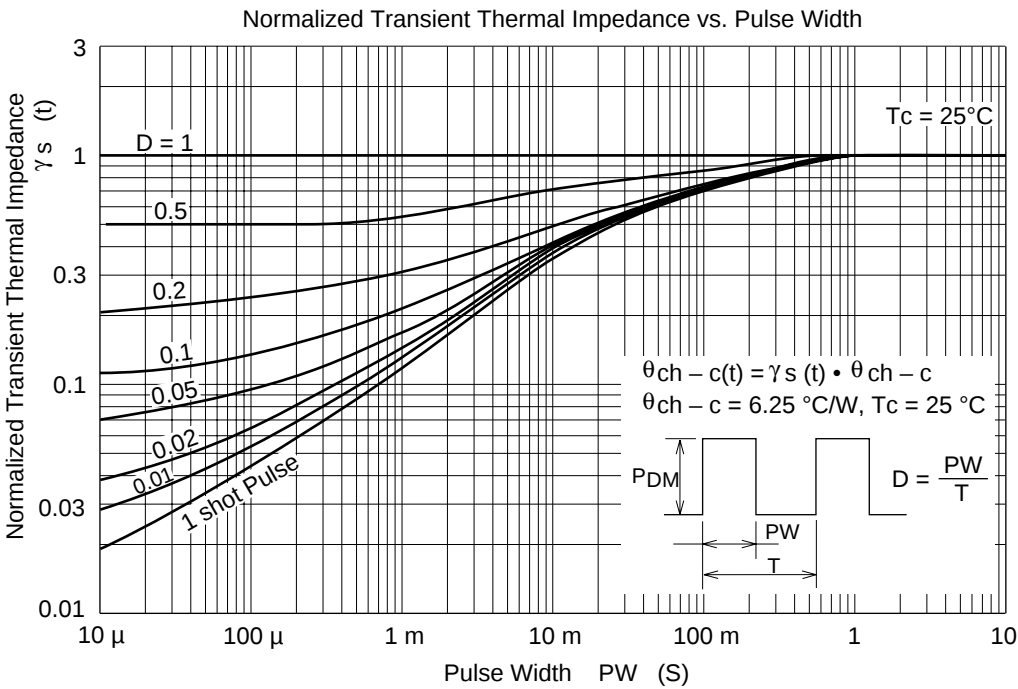
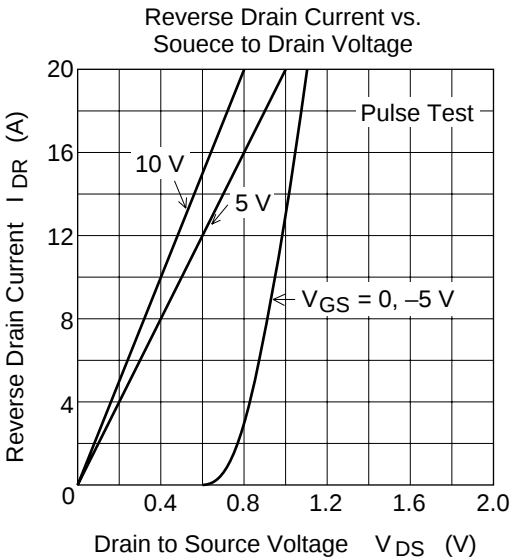
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	20	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	100	μA	$V_{DS} = 16 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.5	V	$I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.04	0.053	Ω	$I_D = 4 \text{ A}$ $V_{GS} = 10 \text{ V}^*$
		—	0.058	0.075	Ω	$I_D = 4 \text{ A}$ $V_{GS} = 4 \text{ V}^*$
Forward transfer admittance	$ y_{fs} $	5	9	—	S	$I_D = 4 \text{ A}$ $V_{DS} = 10 \text{ V}^*$
Input capacitance	C_{iss}	—	800	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	C_{oss}	—	680	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	165	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	15	—	ns	$I_D = 4 \text{ A}$
Rise time	t_r	—	60	—	ns	$V_{GS} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	100	—	ns	$R_L = 5 \text{ }\Omega$
Fall time	t_f	—	80	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.9	—	V	$I_F = 7 \text{ A}$, $V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	80	—	ns	$I_F = 7 \text{ A}$, $V_{GS} = 0$, $diF / dt = 20 \text{ A} / \mu\text{s}$

* Pulse Test

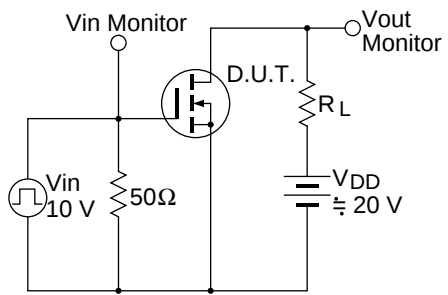








Switching Time Test Circuit



Waveform

